DOCUMENT RESUME

ED 141 520 08 CE 011 267

AUTHOR Biester, Thomas W.
TITLE Evaluation of Cumulative Effects of RBS Career Education. 1974-1976.
INSTITUTION Research for Better Schools, Inc., Philadelphia, Pa.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 31 Aug 76
CONTRACT NE-C-00-4-0011
NOTE 89p.; Tables may be marginally legible due to small type

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS *Basic Skills; Career Education; Dropout Rate; *Occupational Guidance; *Program Effectiveness; Program Evaluation; Secondary Education; Skill Development; Student Attitudes; *Student Characteristics; *Student Experience; Student Opinion; Student Placement; *Vocational Development
IDENTIFIERS Experience Based Career Education; Pennsylvania; *Research for Better Schools

ABSTRACT

Cumulative (two years) and second year program results for students at the Academy for Career Education in Philadelphia who participated in RBS (Research for Better Schools) career education from the 1974-75 through 1975-76 academic years are presented, and procedures utilized in the evaluation are described. (RBS career education is an experience-based career education program designed to provide secondary school students with cognitive skills, career experiences, and personal perspectives which aid in the selection and pursuit of adult life goals. The three principal instructional components designed to achieve program goals are career development, career guidance, and basic skills.) This report is organized in a research format to allow a clear presentation of the findings on student outcomes. Procedural sections include student samples, student attrition, instruments, and evaluation design. In the results section, hypothesized student effects are tested using designated statistical procedures. Separate subsections are included to analyze cumulative and second year outcomes. The concluding summary and conclusions section capsulizes the significance of the findings. The following overall conclusions are presented: During the first year, program students demonstrated significant growth in career knowledge, attitudes toward learning environments, and basic skills; second year students replicated first year growth and exhibited additional program effects in career maturity, self concept, and reading comprehension; and the cumulative impact of two years of participation in RBS education was clearly demonstrated as all 2-year hypotheses of effect were supported. (TA)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED141520

EVALUATION OF
CUMULATIVE EFFECTS OF
RBS CAREER EDUCATION

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

1974 - 1976

August 31, 1976

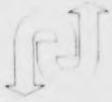
Career Education Program

Research for Better Schools
1700 Market Street
Philadelphia, Pennsylvania 19103

CE 011 267

The preparation and publication of **EVALUATION OF CUMULATIVE EFFECTS** of RBS Career Education has been funded in part by the Vocational Education Act (P.L. 8910, Title IV) as amended in 1968, in cooperation with the National Institute of Education, under research contract #NE-C-004-0011. The opinions expressed in this publication do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the National Institute of Education should be inferred.

The **EVALUATION OF CUMULATIVE EFFECTS** was prepared by Thomas W. Biester.



Research for Better Schools, Inc.
1700 Market Street
Philadelphia, Pennsylvania 19103

TABLE OF CONTENTS

		Page
I.	Introduction	1
II.	Student Samples	6
III.	Student Attrition	19
IV.	Instruments	24
V.	Evaluation Design	28
VI.	Results	36
VII.	Summary and Conclusions	69

Tables

Page

Student Samples

1. Grade Level 7
2. Sex 8
3. Race 8
4. Primary Reasons for CEP Enrollment 9
5. Father's Educational Level 10
6. Mother's Educational Level 10
7. Paternal Occupation 11
8. Maternal Occupation 12
9. Primary Post Secondary Plans 13
10. Immediate Occupational Plans 14
11. Long-Range Occupational Plans 15
12. Achievement Level Grade Equivalents 16

Student Attrition

13. Group Size 20
14. School Dropouts: 1975-1976 21
15. School Dropouts: 1974-1976 22

Results

16. Data Representativeness - Academic Achievement 38
17. Career Knowledge 1974-1976: E1 Group Growth 41
18. Career Knowledge 1974-1976: E1 vs. C1 Group Growth . . 42
19. Career Maturity 1974-1976: E1 Group Growth 43
20. Attitude Toward Career Knowledge 1974-1976: E1 vs. C1 Group Growth 44
21. SDII Congruence 1974-1976 44
22. Assessment of Student Attitudes Toward Learning Environments 1974-1976: E1 Group Growth 46
23. Assessment of Student Attitudes Toward Learning Environments 1974-1976: E1 vs. C1 Group Growth . . . 47
24. Self-Concept 1974-1976: E1 Group Growth 48
25. Self-Concept 1974-1976: E1 vs. C1 Group Growth 49
26. CTBS Grade Equivalents 1974-1976: E1 Group 51

Tables (Continued)

Page

Results (Continued)

27. Basic Skills 1974-1976: EI Group Growth 51
28. Basic Skills 1974-1976: EI vs. CI Group Growth . . . 52
29. Career Knowledge 1975-1976: EI Group Growth 54
30. Career Knowledge 1975-1976: EI vs. CI Group Growth . 55
31. Career Maturity 1975-1976: EI Group Growth 56
32. Attitude Toward Career Knowledge 1975-1976: EI vs CI Group Growth 57
33. SDII Congruence 1975-1976 58
34. Assessment of Student Attitudes Toward Learning Environments 1975-1976: EI Group Growth 60
35. Assessment of Student Attitudes Toward Learning Environments 1975-1976: EI vs. CI Group Growth . . 62
36. Self-Concept 1975-1976: EI Group Growth 63
37. Self-Concept 1975-1976: EI vs. CI Group Growth . . . 64
38. CTBS Grade Equivalents 1975-1976: EI Group 66
39. Basic Skills 1975-1976: EI Group Growth 66
40. Basic Skills 1975-1976: EI vs. CI Group Growth . . . 67

Summary and Conclusions

41. Summary of Student Outcomes: 1974-1976 74

I. INTRODUCTION

This report examines the effects of multiple year participation in RBS Career Education. The report specifically addresses the questions: "What are the overall effects of participating in the program for two years?" and "What are the effects of participating in the program for a second year?" This report on cumulative and second year effects complements a previous study of one year effects.

RBS Career Education is an experience-based career education program which recently completed its fourth year of operation with secondary school students. Evaluation has been a continuing component in the development of RBS Career Education. The evaluation findings have provided a useful source of information in refining the program as well as offering evidence of program effectiveness to participants, sponsors, potential adopters and other members of the educational community.

During the first two years of operation, the evaluation emphasis was basically formative and a quasi-experimental design was utilized to monitor student effects. During the third year of operation (1974-1975), a true experimental design was achieved through the random assignment of program applicants to experimental and control groups. The evaluation emphasis was on one year student outcomes and results were presented in the Career Education Program 1974-1975 Final Evaluation Report.

During 1975-1976, the true experimental design was maintained with students from the 1974-1975 study of one year effects. Thus, the maintenance of the true experimental sample for a two year period allows the assessment of cumulative and second year student outcomes.

This summative study was conducted with students from the Academy for Career Education in Philadelphia, an implementation of the RBS Career Education model. The Academy has been located at Olney High School, a large urban high school, since the 1974-1975 school year. Approximately 325 students in grades 9-12 were enrolled in the Academy for the 1975-1976 school year.

RBS Career Education consists of three principal instructional components: Career Development, Career Guidance, and Basic Skills. The program at the Academy is staffed by an administrative head who is assisted by seven resource coordinators, six teachers and two teacher aides. The resource coordinators conduct Career Development and Career Guidance activities. Three English and three mathematics teachers provide basic skills instruction.

The Career Development component consists of two basic elements: Career Exploration and Career Specialization. Exploration courses are available for approximately 20 clusters of related careers involving more than 100 community resource sites. Each cluster is developed jointly by representatives of the participating resource sites and the Academy. All programs are conducted by employees of the participating companies and agencies. Activities within the cluster programs are varied. They typically include presentations, tours, interactions

with employees, try-outs at different jobs, and group discussions of experiences. For each 12-week academic quarter students select one of the available clusters for their Career Exploration experience. They are involved in cluster programs at resource sites for one full day each week.

Students may elect to participate in Career Specialization after they have made a tentative career choice. This activity permits individual students to investigate a single career or resource site in depth. The student defines the objectives for each specialization and participates in the development of learning activities to attain those objectives. Career Specializations take place at resource sites and may last from a few weeks to several months. Together with Career Exploration, they constitute the student's direct experience in community environments.

Career Guidance is the second instructional component of the RBS Career Education model. Its activities are crucial in helping students understand themselves, assimilate their experiences in the program and view career selection within the context of their own values. Students participate weekly for an hour and a half in small group guidance sessions. These sessions promote self-exploration, values clarification, life skills development, motivation to learn, career planning, and integration of program experiences. Five separate curricula were developed by the Academy staff for the varied levels of students enrolled in the program. Exercises from the RBS Career

Clarification program provide the primary curricular content for the group guidance sessions. Students also meet individually with career counselors on a regular basis.

The third component of RBS Career Education addresses Basic Skills. It is operationalized as an Academic Resource Center which focuses on the development of communications and mathematics skills. A systematic, individualized approach which employs a wide variety of materials and resources is used to construct learning experiences for each student. Strengths and weaknesses are diagnosed continuously as students work through individually prescribed programs at their own rate with trained teachers available to monitor progress and to formulate new prescriptive programs accordingly. Activities in the Academic Resource Center are related to other program elements where appropriate and possible. Students are scheduled for language arts and mathematics instruction in the Academic Resource Center for two periods a day for each of the four days that they are in school.

These three instructional components constitute the essence of the RBS Career Education model. They are characteristically individualized and responsive to student needs. The components are integrated to contribute to the development of students career skills, life or self skills, and basic skills. The program has been designed to maximize student development and choice within an operational structure which can effectively serve a large number of students at reasonable costs.

This report has been organized in a research format to allow a clear presentation of the findings on student outcomes. Procedural sections include Student Samples, Student Attrition, Instruments, and Evaluation Design. In the Results section, hypothesized student effects are tested using designated statistical procedures. Separate subsections are included to analyze cumulative and second-year outcomes. The concluding Summary and Conclusions section capsulizes the significance of the findings. The non-technical reader may find several portions to be overly burdensome. For this reason, the most important elements of each section have been expressed in the Summary and Conclusions section without technical language.

II. STUDENT SAMPLES

During the 1975-1976 academic year, tenth, eleventh, and twelfth grade students from Olney High School participated in experimental and control groups for the evaluation of RBS Career Education. The groups were designated as follows:

1. E1 - randomly selected true experimental group
2. C1 - randomly selected true control group

The groups were randomly selected from the pool of applicants for the 1974-1975 program and participated in the evaluation of first year effects. Both groups were maintained during 1975-1976 to study second year and cumulative program effects. Due to attrition over the two-year period, the final groups were substantially smaller than the original randomly selected groups.

Demographic characteristics were collected to provide basic information on the total range of students available for the 1975-1976 evaluation of RBS Career Education. The characteristics selected were grade level, sex, race, reasons for enrollment in the program, parental occupation and educational level, post-secondary plans, and achievement level. These data are presented for both student groups as they were constituted at the end of the 1975-1976 school year. Several students omitted items toward the end of the demographic questionnaire due to limited instrument administration time. For these items, pretest responses are presented and are noted accordingly.

Grade

Over 54 percent of the students available for the evaluation of RBS Career Education were twelfth grade students. Twenty-nine (29) percent were tenth grade students and 15 percent were eleventh grade students. The high representation of twelfth grade students reflects the high proportion of the eleventh grade students who applied for the 1974-1975 program. Table 1 presents information regarding the grade level of students.

Table 1

Grade Level

Group \ Grade	10 #	10 %	11 #	11 %	12 #	12 %	Total
E1	20	30.9	12	18.5	33	50.8	65
C1	10	27.8	4	11.1	22	61.1	36
Total	30	29.7	16	15.8	55	54.5	101

Sex

Over 60 percent of the students who participated in the evaluation of RBS Career Education or served as control counterparts were female. This disproportion reflects the sex category distribution of applicants to the program in 1974-1975. Over two-thirds of the students who constituted the selection pool were female. Table 2 presents information regarding the sexual composition of experimental and control groups.

Race

Over 61 percent of the students involved in the evaluation of the RBS Career Education Program were Black. Over 34 percent were White

and less than 4 percent belonged to other ethnic groups. This is fairly representative of the student population of Olney High School. Table 3 presents the racial characteristics of the student samples.

Table 2

Sex

Group \ Sex	Female #	Female %	Male #	Male %	Total
E1	42	61.8	26	38.2	68
C1	21	58.3	15	41.7	36
Total	63	60.5	41	39.4	104

Table 3

Race

Group \ Race	Black #	Black %	White #	White %	Other #	Other %	Total
E1	42	61.8	23	33.8	3	4.5	68
C1	22	61.4	13	36.1	1	2.8	36
Total	64	61.5	36	34.6	4	3.8	104

Reasons for Career Education Program Enrollment

Both groups applied for admission to the Career Education Program in 1974. Students were asked to rank up to three reasons for enrollment in the program. Most students in the C1 group, however, omitted this item in 1976. For those who responded, the most often indicated reason was "To find out about careers." This reason accounted for almost half of the primary reasons for enrollment in the Career Educa-

tion Program. Table 4 presents the primary reasons for enrollment in the program.

Table 4

Primary Reasons for CEP Enrollment

Reason \ Group	EI		CI		Total	
	#	%	#	%	#	%
To receive counseling about what I do after I finish school	4	6.9	0	0	4	6.3
To have more individual attention in my school program	7	12.1	0	0	7	11.1
To find out about careers	28	48.3	3	60.0	31	49.2
To have learning activities outside of the school	1	1.7	0	0	1	1.6
To get into a program different from regular school	5	8.6	0	0	5	7.9
To get help in finding a job	3	5.2	1	20.0	4	6.3
To make new friends	1	1.7	0	0	1	1.6
To get job training	9	15.5	1	20.0	10	15.9
Total	58		5		63	

Parental Educational Level

Students who participated in the evaluation study were asked to indicate the educational level of each of their parents. Nearly 69 percent of the fathers and 69 percent of the mothers were at least high school graduates. Another 16 percent of the fathers and 25 percent of the mothers had some high school training. Over 12 percent of the fathers and 15 percent of the mothers had some college training.

Table 5 presents information regarding the father's educational level and Table 6 presents information regarding the mother's educational level.

Table 5

Father's Educational Level

Level \ Group	EI #	EI %	CI #	CI %	Total #	Total %
Elementary school	5	10.0	0	0.0	5	6.7
Junior high school	4	8.0	2	8.0	6	8.0
Some high school training	10	20.0	2	8.0	12	16.0
High school diploma	20	40.0	14	56.0	34	45.3
Some college training	7	14.0	2	8.0	9	12.0
College degree	1	2.0	4	16.0	5	6.7
Some graduate school training	0	0.0	1	4.0	1	1.3
Graduate school degree	3	6.0	0	0.0	3	4.0
Total	50	100.0	25	100.0	75	100.0

Table 6

Mother's Educational Level

Level \ Group	EI #	EI %	CI #	CI %	Total #	Total %
Elementary school	0	0.0	0	0.0	0	0.0
Junior high school	4	7.0	1	3.7	5	6.0
Some high school training	16	28.1	5	18.5	21	25.0
High school diploma	23	40.4	14	51.9	37	44.0
Some college training	10	17.5	3	11.1	13	15.5
College degree	2	3.5	3	11.1	5	6.0
Some graduate school training	0	0.0	0	0.0	0	0.0
Graduate school degree	2	3.5	1	3.7	3	3.6
Total	57	100.0	27	100.0	84	100.0

Parental Occupations

Students in the E1 and C1 groups indicated the occupation of each of their parents. Fifty-four (54) percent of the fathers were skilled or semi-skilled workers. Over 46 percent of the mothers were homemakers. Thirty-one (31) percent of the mothers were either clerical and sales workers or unskilled employees. Table 7 presents paternal occupations and Table 8 presents maternal occupations.

Table 7

Paternal Occupation

Occupation \ Group	E1 #	E1 %	C1 #	C1 %	Total #	Total %
Higher executives, proprietors of large concerns, and major professionals	1	2.2	1	5.3	2	3.1
Business managers, proprietors of medium sized businesses, and lesser professionals	1	2.2	3	15.8	4	6.3
Administrative personnel, small independent business owners, and minor professionals	7	15.6	1	5.3	8	12.5
Clerical and sales workers, technicians, and owners of little businesses	2	4.4	2	10.5	4	6.3
Skilled manual employees	18	40.0	7	36.8	25	39.1
Machine operators and semi-skilled employees	12	26.7	4	21.1	16	25.0
Unskilled employees	2	4.4	0	0.0	2	3.1
Homemaker	0	0.0	0	0.0	0	0.0
Unemployed	2	4.4	1	5.3	3	4.7
Total	45	100.0	19	100.0	64	100.0

Table 8

Maternal Occupation (1974 Responses)

Occupation \ Group	EI #	EI %	CI #	CI %	Total #	Total %
Higher executives, proprietors of large concerns, and major professionals	0	0.0	0	0.0	0	0.0
Business managers, proprietors of medium sized businesses, and lesser professionals	4	7.0	4	12.5	8	9.0
Administrative personnel, small independent business owners, and minor professionals	0	0.0	0	0.0	0	0.0
Clerical and sales workers, technicians, and owners of little businesses	14	24.6	2	6.3	16	18.0
Skilled manual employees	3	5.3	1	3.1	4	4.5
Machine operators and semi-skilled employees	3	5.3	2	6.3	5	5.6
Unskilled employees	6	10.5	6	18.8	12	13.5
Homemaker	25	43.9	16	50.0	41	46.1
Unemployed	2	3.5	1	3.1	3	3.4
Total	57	100.0	32	100.0	89	100.0

Post Secondary Plans

Students stated their plans after completing their secondary school program, indicating their first three choices. Over 31 percent of the primary choices indicated that students planned to attend four year colleges or universities. Twenty-four (24) percent of the responses indicated students planned on full-time employment and 6 percent of the responses indicated that students planned on part-time

employment. Almost 26 percent of the responses indicated that students planned further formal vocational, technical, trade or business training. Table 9 presents information regarding students post-secondary plans.

Table 9

Primary Post-Secondary Plans

Plans \ Group	EI #	EI %	CI #	CI %	Total #	Total %
Full-time employment	15	25.4	7	23.3	22	24.7
Apprenticeship or on-the-job training	1	1.7	0	0.0	1	1.1
Regular military service or a service academy	3	5.1	2	6.7	5	5.6
Full-time homemaker	2	3.4	2	6.7	4	4.5
Vocational, technical, trade or business school	5	8.5	6	20.0	11	12.4
Study of academic courses at junior or community college	10	16.9	2	6.7	12	13.5
Study of technical or vocational subjects at junior or community college	0	0.0	0	0.0	0	0.0
Four-year college or university	20	33.9	8	26.7	28	31.5
Part-time employment	3	5.1	3	10.0	6	6.7
Total	59	100.0	30	100.0	89	100.0

Occupational Plans

Applicants to the Career Education Program were asked to state their immediate and long-range occupational plans. Long-range occupational plans were in the context of five years after completion of education.

Immediate Occupational Plans. Over 27 percent of the students indicated that they planned to be business managers, lesser professionals, or proprietors of medium-sized businesses. More than 22 percent indicated that they planned to be clerical and sales workers, technicians, or owners of small businesses immediately after completion of their education. Over 18 percent planned to be higher executives, major professionals, or proprietors of large concerns. No students planned to become homemakers. Table 10 presents the immediate occupational plans of students.

Table 10

Immediate Occupational Plans (1974 Responses)

Occupation \ Group	E1		C1		Total	
	#	%	#	%	#	%
Higher executives, proprietors of large concerns, and major professionals	10	19.6	4	15.4	14	18.2
Business managers, proprietors of medium sized businesses, and lesser professionals	15	29.4	6	23.1	21	27.3
Administrative personnel, small independent business owners, and minor professionals	4	7.8	3	11.5	7	9.1
Clerical and sales workers, technicians, and owners of little businesses	10	19.6	7	26.9	17	22.1
Skilled manual employees	8	15.7	5	19.2	13	16.9
Machine operators and semi-skilled employees	3	5.9	1	3.8	4	5.2
Unskilled employees	1	2.0	0	0.0	1	1.3
Homemaker	0	0.0	0	0.0	0	0.0
Unemployed	0	0.0	0	0.0	0	0.0
Total	51	100.0	26	100.0	77	100.0

Long-Range Occupational Plans. Over 34 percent of the students indicated that they planned to be business managers, lesser professionals, or proprietors of medium-sized businesses five years after completion of their education. Over 22 percent indicated they planned to be higher executives, major professionals or proprietors of large concerns. More than 17 percent planned on being clerical sales workers, technicians, or owners of small businesses. Twelve (12) percent planned to be skilled manual employees. Table 11 presents information regarding the long-range occupational plans of students.

Table 11

Long Range Occupational Plans (1974 Responses)

Occupation \ Group	EI		CI		Total	
	#	%	#	%	#	%
Higher executives, proprietors of large concerns, and major professionals	11	22.9	6	22.2	17	22.7
Business managers, proprietors of medium sized businesses, and lesser professionals	17	35.4	9	33.3	26	34.7
Administrative personnel, small independent business owners, and minor professionals	2	4.2	3	11.1	5	6.7
Clerical and sales workers, technicians, and owners of little businesses	6	12.5	7	25.9	13	17.3
Skilled manual employees	8	16.7	1	3.7	9	12.0
Machine operators and semi-skilled employees	3	6.3	1	3.7	4	5.3
Unskilled employees	0	0.0	0	0.0	0	0.0
Homemaker	1	2.1	0	0.0	1	1.3
Unemployed	0	0.0	0	0.0	0	0.0
Total	48	100.0	27	100.0	75	100.0

Achievement Level

Students in both groups took the Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications subtests of the Comprehensive Tests of Basic Skills (CTBS) in Spring, 1974 as a pretest. Achievement levels for each of the groups were derived from performance on the CTBS. At the time of testing, students were in eighth, ninth, and tenth grades, the majority being in the latter. The C1 group is consistently higher than the E1 group in presenting achievement level; the differences range from three quarters to a full grade equivalent. Table 12 presents information regarding presenting achievement level of the retained groups.

Table 12

Achievement Level
Grade Equivalent

Spring, 1974

Group / CTBS-Subtest	E1 n=63	C1 n=32
Reading Comprehension	6.99	7.73
Arithmetic Concepts	7.21	8.25
Arithmetic Applications	6.49	7.38

Summary of Group Characteristics

As they were represented by this series of demographic analyses, the student groups involved in the 1974-1976 evaluation appeared to be similar with regard to most background characteristics. A total of 68 experimental students and 36 control subjects were included in the analyses. These figures are less than the initially selected groups

due to graduates and dropouts during the course of two years. The attrition problem is discussed in the next section of the report.

Most students were twelfth graders with smaller representation from the tenth and eleventh grades. Males and Whites constituted only minority segments of the groups.

Most students applied for entrance to the Career Education Program in order to find out about careers, to receive job training, to receive counseling about what to do after high school, or to get help in finding a job.

Most parents were reported to have at least some high school training or a high school diploma. Control group students reported that their fathers have a higher degree of education that did the experimental group students. Most fathers were skilled or semi-skilled employees, while the largest group of mothers were in the homemaker category.

Most students anticipated attending a four-year college, full-time employment, or vocational-technical-business school upon graduation from high school. Specific occupational plans were varied, but many suggested the use of further training and some entrepreneurial interest. In general, the plans indicated by students exceeded the ambitions reportedly realized by their parents.

In terms of academic achievement as measured by standardized tests of basic skills, the average entry level grade equivalents ranged from the sixth through eighth grade level. These averages are obviously well below the desirable levels as expressed by national norms.

Differences were found between experimental and control group achievement on all subtests, with the control group consistently scoring higher.

III. STUDENT ATTRITION

Student attrition from educational programs is a phenomenon which presents difficulties for administrators, evaluators, and the students involved. Administrators must arrange for reinstating program dropouts in another curriculum, as well as filling their places in the original program. Evaluators must adjust designs and procedures to accomodate changing student groups. The students must face entering another curriculum at a disadvantage due to lost time or entering a non-school environment at an atypical time. The consequences of attrition are thus significant.

In the preceding section, student samples were described as they existed at the end of the second year of the evaluation study. These were the students in the E1 group who remained in the program for the two-year period and the C1 students who remained in school and were available for testing. Several students in each group graduated after the 1974-1975 school year. Another contingent of students was not represented in the preceding section because they dropped out of the school or the program during the course of two years. The present section examines attrition from the original randomly selected groups.

Table 13 presents the figures for group size at the beginning and end of the 1974-1975 and 1975-1976 RBS Career Education Program years. It can be seen that the rates of attrition for both groups were substantial. However, the rates are misleading unless the reasons for attrition are examined. There is a difference in the meaning of attrition for experimental and control group students.

Table 13

Group Size

Group	Group Enrollment			Attrition (% of Initial Group)		
	Initial	First Year	Second Year	First Year	Second Year	Total
E1	254	173	77	81 (31.9)	96 (37.8)	177 (69.7)
C1	86	69	48	17 (19.8)	21 (24.4)	38 (44.2)

An analysis of first-year attrition was presented in the RBS Career Education Program 1974-1975 Final Evaluation Report. It was noted that all drops from the C1 group during the first year were school dropouts, while attrition for the E1 group included students who dropped from the program, but not necessarily out of school. Results indicated that attrition from the E1 group occurred early in the school year, suggesting that actual experience in the program differed from student expectations. The first-year school dropout rate for the E1 group was 5.91 percent, compared with 19.77 percent of the C1 group, a statistically significant difference.

The 96 students who dropped from the program (E1) group during the 1975-1976 school year included 18 students who graduated in 1975 and five students who dropped out of school. In addition, 11 students transferred to other schools, 32 decided voluntarily to drop from the program into regular school programs, and 30 were transferred to regular

programs by Academy staff. Those students who dropped voluntarily did so for a variety of reasons. These included students who felt that one year of the program satisfied their needs, students who transferred to a paid work study program, students who felt a need for more advanced academic courses, and students who were dissatisfied with program elements. Nine students in the retained E1 group (12 percent) were absent for post-testing in 1976.

The 21 students who dropped from the C1 group during the 1975-1976 school year included 11 students who graduated in 1975 and 10 students who dropped out of school. Twelve students in the remaining C1 group (25 percent) were absent for posttesting in 1976.

Separating the E1 school dropouts from the program dropouts allowed an analysis of comparative school dropout rates. Table 14 presents the figures on dropout rates over the 1975-1976 school year. Only those students who remained in the E1 and C1 groups after first year attrition are included. Thus, all students participated in the program for at least one year.

Table 14

School Dropouts: 1975-1976

Status / Group	Retained Students			School Dropouts			Total	
	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	χ^2
E1	168	162.3	0.1934	5	10.7	6.4980*	173	6.6914*
C1	59	64.7	0.5507	10	4.3	3.2490*	69	3.7997*
Total	227		0.7441	15		9.7470*	242	10.4911*

* $p < .10$ at $df = 1$ when $\chi^2 \geq 2.706$.

The difference in the school dropout rates of the experimental and control groups is striking. Less than 3 percent of the retained EI group dropped out of school during the second year of program participation, while over 14 percent of the retained CI group dropped out of school. Chi square values indicated that the experimental group had significantly fewer school dropouts than expected and the control group had significantly more.

Table 15 presents the figures on the cumulative dropout rates over the two year evaluation period. The number of dropouts for the EI group includes six students who transferred from the program to regular school classes during the 1974-1975 school year, but who did not drop out of school until the 1975-1976 school year. Twenty-one (21) of the EI students who dropped out of school participated in the program for less than one academic year.

Table 15

School Dropouts: 1974-1976

Group \ Status	Retained Students			School Dropouts			Total	
	f_o	f_e	x^2	f_o	f_e	x^2	f_o	x^2
EI	228	214.4	.8626	26	39.6	4.6707*	254	5.5333*
CI	59	72.6	2.5476	27	13.4	13.7912*	86	16.3388*
Total	287		3.4102*	53		18.4619*	340	21.8721*

*$p < .10$ at $df = 1$ when $x^2 \geq 2.706$

The difference in cumulative dropout rates of both groups is clearly illustrated. Overall, 31 percent of the original CI group dropped out of school during the course of the two year study, while only 10 percent of the original EI group dropped out of school. Chi square values indicated that the experimental group had significantly fewer school dropouts than expected and the control group had significantly more. It thus seems that exposure to the program reduces the likelihood of dropping out of school.

IV. INSTRUMENTS

Three general areas in which student outcomes were of interest to the program and the funding agency were identified. Those areas were (1) Career Skills, (2) Life or Self Skills, and (3) Basic Academic Skills. Additionally, the program had need of basic demographic information for students who participated in the Career Education Program or served as control group counterparts. Instruments selected or constructed to address each area are discussed below.

Student Demographic Data

A Student Demographic Data Questionnaire (SDQ) was constructed to gather information concerning the demographic characteristics of students. The SDQ collects information such as student name, address, telephone number, birth date, sex, grade level, and ethnic group membership. The SDQ solicits grade average, attendance rate, plans after completing secondary school program, and reason for applying to the Career Education Program. The SDQ also requests parental occupations and levels of education as well as the short-term and long-term occupational plans of students.

Career Skills

The area of career skills is one of central interest to the field of career education. Instruments available to assess this area have been criticized as being of questionable psychometric quality or too lengthy to administer in combination with other instruments.

Other criticisms focus on the underlying constructs of the instruments which are viewed as being too narrowly drawn or in opposition to the goals and intents of experience-based career education. The instruments listed below were selected or constructed in the context of these criticisms.

Career Maturity Inventory (CMI). Two subtests of the CMI Competence Test were selected to assess career skills development; they were the Occupational Information and Planning subtests. They were selected since they attempt to measure knowledge of career and occupational facts and sequences and are relatively free of biases which are contradictory to goals of the program. The other subtests and the Attitude Scale of the CMI were reviewed by RBS project staff and evaluators from other laboratories and were judged to reflect goals in opposition to those of the program or to possess low reliability and validity.

Career Attitude Scale (CAS). The CAS is a 25 item Likert-like scale developed in response to the criticism of the CMI Attitude Scale. There are two subscales to the CAS: The Attitude Toward Career Knowledge scale (15 items) and the Attitude Toward Career Planning scale (10 items). The latter proved to be in need of revision and was not used in the hypothesis testing.

Self-Directed Interest Inventory (SDII). The SDII is a self-assessment of skills, abilities, and interests. The instrument is an adaptation of Holland's Self-Directed Search and scores are interpreted in a similar way. Students indicate likes and dislikes, activities

in which they are competent, and occupations and activities in which they are interested. They also assess relative ability in several areas and indicate the sequence of occupations they have considered.

The occupations considered and the overall scores are collapsed into six categories which are then ranked: Realistic, Intellectual or Investigative, Social, Enterprising, Artistic, and Conventional. The instrument is based on the premise that individuals seek environments and vocations which are consonant with self-assessment and avoid those which are dissonant.

The measure that is used to assess career skills development is the agreement between the primary occupation considered and the overall ranking of categories.

Life or Self Skills

Two instruments which assess student attitudes were selected to assess life skills development. The instruments are the Assessment of Student Attitudes Toward Learning Environments, and the Berger Acceptance of Self Scale. Each is described below.

Assessment of Student Attitudes Toward Learning Environments (ASA). The ASA is a 26 item Likert-scale instrument developed by RBS for use in traditional and innovative secondary school settings. The instrument yields four subscores and an overall score. The scales are Attitude Toward Education in General, Attitude Toward School Curriculum, Attitude Toward School Resources, Attitude Toward School Counseling, and Overall Attitude Toward Learning Environments.

Berger Acceptance of Self Scale (BASS). The BASS is a 36 item Likert-formatted instrument developed to assess student attitude toward self. This yields a single self-concept score.

Basic Academic Skills

The Comprehensive Tests of Basic Skills (CTBS)were selected to assess basic academic skill proficiency. The CTBS is a standardized instrument with four levels having two alternate forms each. Level 4 of the CTBS is appropriate for use with secondary students and was utilized in this study. Specific subtests of the CTBS used were Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications.

V. EVALUATION DESIGN

The evaluation design for 1974-1975 was based on the capability of testing one year program effects within the context of a true experimental design. The E1 (experimental) and C1 (control) groups had been composed from the same pool using random assignment; the E1 group was in the Career Education Program for its first year, while the C1 group continued in the regular high school curriculum due to their not being selected for the program.

The true experimental design was maintained with returning E1 and C1 students during the 1975-1976 academic year. This permitted analyses of second year and cumulative (two year) program effects. However, extensive student attrition has decreased the likelihood that the retained groups are representative of the original groups. Also, as noted in Section II, the C1 group is clearly superior than E1 on measures of academic achievement administered as a pretest. In general, there were no differences between groups with regard to demographic characteristics.

The following instruments were selected for use in the evaluation

1. Student Demographic Data Questionnaire (SDQ)
2. Career Maturity Inventory (CMI)
3. Career Attitide Scale (CAS)
4. Self-Directed Interest Inventory (SDII)
5. Assessment of Student Attitudes Scale (ASA)

6. Berger Acceptance of Self Scale (BASS)

7. Comprehensive Tests of Basic Skills (CTBS)

These instruments are described in Section IV above. The SDQ was used to gather demographic, background, and personal planning information. The other instruments were included in the pretest-posttest package to obtain data for the evaluation of student effects.

The pretest administration was completed in two sets of sessions. The first was conducted as part of the selection process in May, 1974 and included the SDQ and CTBS. The second was scheduled after the summer recess in October, 1974 and contained all other instruments. All instruments were administered by the project evaluation staff under prescribed conditions in testing rooms provided by the high school.

First year posttest administration was conducted in one set of sessions during May and early June, 1975. All instruments, except the SDQ, were completed in these sessions. The instruments were administered by external evaluation staff (ETS) and scheduled and supervised by the project evaluators. Testing was conducted under standardized conditions in facilities provided by the high school.

Second year posttest administration was conducted during February, 1976. All instruments were completed in the testing sessions. The instruments were administered by school staff who were trained and supervised by the project evaluators. Testing was conducted under standardized conditions in facilities provided by the high school.

Test scoring was done manually for the first test administration

and by machine, using an RBS-developed scoring package, for the second and third. A random sample of student scores was verified for each instrument after each test administration. All resultant data were entered into the project's computer data system.

A set of five hypothesis areas was established to investigate the effects of RBS Career Education. These hypothesis areas relate to student effects in career skills, life or self skills, and basic skills. Two hypotheses have been stipulated for each area, one regarding growth within the experimental groups, and one regarding comparative growth between experimental and control groups. Each hypothesis was to be tested on two levels. The first level was to examine cumulative within-group and between-group growth over the two-year period, while the second level was to examine within-group and between-group growth which occurred during the second year of the study. Thus, a total of 20 hypotheses (ten at each level) were stipulated. These hypotheses were as follows:

Cumulative Program Effects (Two Year)

Career Skills:

1. Experimental students will acquire increased mastery in career knowledge.
2. Experimental students will acquire significantly greater mastery in career knowledge than control students in a traditional high school program.
3. Experimental students will acquire increased career maturity.

4. Experimental students will acquire significantly greater career maturity than control students in a traditional high school program.

Life Skills.

5. Experimental students will acquire increased positive attitudes toward learning environments.

6. Experimental students will develop significantly more positive attitudes toward learning environments than control students in a traditional high school program.

7. Experimental students will acquire increased positive attitudes toward self.

8. Experimental students will develop significantly more positive attitudes toward self than control students in a traditional high school program.

Basic Skills.

9. Experimental students will acquire increased mastery in basic academic skills.

10. Experimental students will acquire significantly greater mastery in basic academic skills than control students in a traditional high school program.

Second Year Program Effects

Career Skills.

11. Experimental students will acquire increased mastery in career knowledge during the second year of program participation.

12. Experimental students will acquire significantly greater mastery in career knowledge during the second year of program participation than control students in a traditional high school program.

13. Experimental students will acquire increased career maturity during the second year of program participation.

14. Experimental students will acquire significantly greater career maturity during the second year of program participation than control students in a traditional high school program.

Life Skills.

15. Experimental students will acquire increased positive attitudes toward learning environments during the second year of program participation.

16. Experimental students will develop significantly more positive attitudes toward learning environments during the second year of program participation in a traditional high school program.

17. Experimental students will acquire increased positive attitudes toward self during the second year of program participation.

18. Experimental students will develop significantly more positive attitudes toward self during the second year of program participation than control students in a traditional high school program.

Basic Skills.

19. Experimental students will acquire increased mastery in basic academic skills during the second year of program participation.

20. Experimental students will acquire significantly greater mastery in basic academic skills during the second year of program participation than control students in a traditional high school program.

Although the areas of effect were the same at both levels for each set of hypotheses, the duration of program intervention varied for each

analysis. The analysis of cumulative program effects compared the original pretest (1974) and the second year posttest (1976) performances of retained students, while the analysis of second year effects compared the first year posttest (1975) and the second year posttest (1976) performances of retained students.

Analyses were designed to test each of the stated hypotheses. The relationship between instruments and hypotheses is specified below.

Career Skills.

Hypotheses 1 and 11 (career knowledge within E1) - CMI Occupation Information and Planning subtests.

Hypotheses 2 and 12 (career knowledge between E1 and C1) - Same as #1/#11.

Hypotheses 3 and 13 (career maturity within E1) - CAS, SDII primary occupation and summary rating.

Hypotheses 4 and 14 (career maturity between E1 and C1, E2 and C2) - Same as #3/#13.

Life Skills.

Hypotheses 5 and 15 (learning attitudes within E1) - ASA.

Hypotheses 6 and 16 (learning attitudes between E1 and C1) - Same as #5/#15.

Hypotheses 7 and 17 (self-concept within E1) - BASS.

Hypotheses 8 and 18 (self-concept between E1 and C1) - Same as #7/#17.

Basic Skills.

Hypotheses 9 and 19 (basic skills within E1) - CTBS Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications

Hypotheses 10 and 20 (basic skills between E1 and C1) - Same as #9/#19.

For hypothesized effects within the experimental groups (hypotheses 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19) the scheduled analyses were t-tests for paired data using matched pretest and posttest scores. The SDII portion of hypotheses 3 and 13 represented an exception to the t-test procedure by utilizing a chi-square analysis of posttest vs. pretest congruence of primary occupation considered and summary rating. These analyses tested for the statistical significance of growth within the experimental groups.

For hypothesized differential effects between the experimental and control groups (hypotheses 2, 4, 6, 8, 10, 12,14, 16, 18, and 20) the scheduled analyses were t-tests, analyses of variance, or analyses of covariance, depending upon pretest findings. If the groups were not found to be equivalent, the Regression Projection Model[1] was to be used to analyze the different growth rates of the two groups. This procedure uses a regression line calculated from the control group pretest-posttest distribution to estimate what the experimental group posttest scores would have been under a "no treatment" condition.

[1] Tallmadge, G.K. and Horst, D.P. A procedural guide for validating achievement gains in educational projects. Los Altos, California RMC Research Corporation, December, 1974.

The SDII portion of hypotheses 4 and 14 represents an exception of the variance or regression projection procedures; a chi-square analysis of experimental vs. control pretest and posttest congruence of primary occupation considered and summary rating was used. These analyses test for the statistical significance of between group differences in growth on the various measures. The .10 level of significance was chosen for all analyses.

In summary, the analysis plan provided for testing cumulative two year and second year growth within the experimental group (E1) and relative progress between the experimental and control group (E1 vs. C1) Each hypothesis was tested using effects demonstrated by the retained groups. A series of instruments was administered on a pretest-posttest schedule over the course of two years to measure variables representing career skills, life skills, and basic skills. Hypothesized effects were tested using various statistical techniques, such as t-tests, chi-square analyses and regression analyses. The analyses provide evidence of program effectiveness for students who have had two years of program exposure.

VI. RESULTS

This section presents analyses related to the cumulative effects of the RBS Career Education Program through the 1974 to 1976 school years, and the second year student effects during the 1975-1976 school year. Two types of analyses are included: data representativeness and testing of hypotheses.

Data representativeness analysis is a preliminary step in hypothesis testing. The representativeness results determine the comparability of final data pairs with the original samples for the true experimental and control groups (E1 and C1). This procedure assesses the integrity of the final groups in terms of the original randomized design.

After data representativeness has been ascertained, each hypothesis is tested in accordance with the analysis plan described above in the design section. Changes in the plan are those occasioned by the data representativeness results.

Data Representativeness

The E1 and C1 groups were originally formed by random assignment from a common pool of applicants for the Career Education Program. The objective of this random assignment procedure was the establishment of true experimental conditions wherein comparative student effects (E1 vs. C1) could be tested with maximum student group equivalence. Two factors which typically affect the assurances provided by a

randomized design are student attrition during the treatment period (see Section III) and student absences during testing sessions. Both factors reduce the number of complete data pairs available for posttest analyses, thereby potentially introducing biases into the once randomly distributed array of subject characteristics. To the degree that the characteristics of the missing cases are known, the extent of these biases may be estimated and accounted for in hypothesis testing. The RBS true experimental design required that all subjects be pretested before randomization, thus assuring that entry characteristics were known and enabled analysis of the representativeness of final data pairs.

For the EI group, the eliminated subgroup equalled 73.2 percent of the original sample while the retained subjects were 26.8 percent of original sample. For the CI group, the figures were 58.1 percent eliminated and 41.9 percent retained. The groups were thus substantially reduced over the two years, with approximately one third of the initial samples available for final analyses.

The eliminated and retained subject subgroups formed the samples for analyses of data representativeness. The degree to which these subgroups were found to be statistically similar was proposed as an index of the degree to which the final data pairs were representative of the original random samples and the true experimental design had remained intact.

Since the size of the retained groups was so small, representativeness analysis of demographic variables would not provide fruitful

input to the data analysis plan. Therefore, the analysis of data representativeness was limited to the achievement variables. Table 16 presents a comparison of the retained E1 and C1 groups with the dropped groups for the achievement measures.

Table 16

Data Representativeness - Academic Achievement

Group	Subtest	Retained	Dropped	"t"
E1	Reading Comprehension	512.33	527.78	-12.76*
	Arithmetic Concepts	496.98	508.54	- 8.28*
	Arithmetic Applications	483.56	494.07	- 8.03*
C1	Reading Comprehension	533.50	533.82	- 0.12
	Arithmetic Concepts	534.47	508.48	8.76*
	Arithmetic Applications	519.25	489.91	10.48*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

Both the retained E1 and C1 groups differed significantly from the dropped groups. The only exception was Reading Comprehension for the C1 groups, on which there was no significant difference. Overall the retained E1 group scored significantly lower than the dropped group on achievement measures while the retained C1 group scored significantly higher than the dropped group. Thus, it can be concluded that the randomized design is no longer intact and the retained groups are not representative of the original randomly selected groups. Given the representativeness analysis results, it is evident that the differences between E1 and C1

pretest performances are real and not due to sampling variation. Therefore, traditional analysis techniques such as the analyses of variance and covariance are not appropriate for examining between group hypotheses.

The Regression Projection Model was used to adjust for the initial EI and CI group differences in order to test the hypotheses of between-group differences. This model uses a regression line calculated from the control group pretest-posttest distribution to estimate what the treatment group posttest scores would have been under a "no treatment" condition. The projected mean score is compared with the obtained posttest mean score by means of a "t" test. The 1975 posttest score was used as a pretest in the analysis of second year effects, while the original 1974 pretest score was used in the analysis of cumulative program effects.

Testing of Hypotheses

RBS Career Education hypothesized student effects in three general areas: (1) career skills, (2) life or self skills, and (3) basic skills. Altogether, twenty hypotheses of student effects were to be tested using the instruments and statistical procedures outlined in Section V of this report. Ten hypotheses test for cumulative effects, while a parallel set of hypotheses test for second year program effects.

Hypotheses for cumulative (two year) and second year program

effects are presented in separate sections. Areas of hypotheses were tested in the following sequence: Career Skills, Life or Self Skills, and Basic Skills. Each area of intended effects is presented separately.

Cumulative Program Effects

Experimental students have participated in the program for two academic years. This section reviews student growth over the entire two year period.

Careeer Skills. Four hypotheses were generated to test overall program impact on career skills development. Two (1 and 3) deal with within-group acquisition of career knowledge and maturity and two (2 and 4) deal with between-group differences in career knowledge and maturity. Specific hypothesis testing for cumulative program effects is presented below.

Hypothesis 1. Experimental students will acquire increased mastery in career knowledge.

The hypothesis that experimental students would acquire increased mastery in career knowledge was tested by comparing the pretest (1974) and final posttest (1976) performances of the E1 group on the Occupational Information and Planning subtests of the Career Maturity Inventory (CMI). Comparisons were conducted through the performances of one-tailed correlated "t" tests on these data. Table 17 presents these comparisons.

Table 17

Career Knowledge 1974-1976: E1 Group Growth (n=67)

Subtest	1974	1976	"t"
Occupational Information	11.43	15.54	7.33*
Planning	9.41	13.18	6.15*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated that the E1 group acquired increased mastery on both subtests of the CMI. The increased mastery was at the level of statistical significance for both subtests. The hypothesized effect was thus realized fully for the experimental students (E1).

Hypothesis 2. Experimental students will acquire significantly greater mastery in career knowledge than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater mastery in career knowledge than control students in a traditional high school program was tested by comparing the actual 1976 posttest performance of the E1 group with projected performance on the Occupational Information and Planning subtests of the CMI. Comparisons for the E1 and C1 groups were conducted through the performance of regression projection analyses. Table 18 presents CMI Occupational Information and CMI Planning subtests results for the E1 and C1 groups.

Table 18

Career Knowledge 1974-1976:
E1 (n=67) vs. C1 (n=30) Group Growth

Subtest	Group	1974	1976	Projected	"t"
CMI Occupational Information	E1	11.43	15.54	14.70	3.08*
	C1	14.13	16.00		
CMI Planning	E1	9.41	13.18	12.28	3.04*
	C1	12.53	13.43		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analyses for the CMI Occupational Information and CMI Planning subtests indicated that the E1 group demonstrated significantly higher growth rates on both subtests than projected from C1 group. Thus, the hypothesis that experimental students demonstrate greater mastery in career knowledge is strongly supported.

Hypothesis 3. Experimental students will acquire increased career maturity.

The hypothesis that experimental students would acquire increased career maturity over the course of the two years was tested by conducting comparisons of the 1974 pretest and 1976 posttest levels of performance on the Attitude Toward Career Knowledge (ATCK) subtest of the Career Attitude Survey (CAS) and the pretest and posttest congruence of primary code and primary occupation considered on the Self-Directed Interest Inventory (SDII). The appropriate statistical test for the former comparison

was a one-tailed correlated "t" test; the appropriate statistical procedure for the latter was a chi-square analysis. The analyses of career maturity are presented in Table 19.

Table 19

Career Maturity 1974-1976: E1 Group Growth (n=63)

Measure	1974	1976	"t"	χ^2
Attitude Toward Career Knowledge	3.62	3.93	3.73*	
SDII Congruence	27/42	26/41		-----

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated a large statistically significant increase for the E1 group's Attitide Toward Career Knowledge and no change in SDII congruence. Since the SDII congruence was clearly the same on the posttest, no formal analysis was conducted.

The results offered support for the hypothesis that experimental students would acquire increased career maturity.

Hypothesis 4. Experimental students will acquire significantly greater career maturity than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater career maturity than control students in a traditional school program was tested by comparison of the actual 1976 E1 posttest

score on the Attitude Toward Career Knowledge (ATCK) subtest of the CAS with the projected score, and congruence on the SDII. Table 20 presents the ATCK results.

Table 20

Attitude Toward Career Knowledge 1974-1976:
E1 (n=63) vs. C1 (n=28) Group Growth

Group	1975	1976	Projected	"t"
E1	3.62	3.93	3.81	2.15*
C1	3.46	3.75		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analysis for the ATCK scale indicated that the E1 group exhibited significantly more growth in positive attitudes toward careers than was projected from the C1 group's performance.

Comparisons of E1 and C1 congruence on the SDII were conducted through the performance of chi-square analyses on 1974 pretest and 1976 posttest data. These analyses are presented in Table 21. Most C1 students omitted the response for "Primary Occupation Considered" on the posttest and only matched group results are presented.

Table 21

SDII Congruence 1974-1976

	E1						C1						All					
	Yes			No			Yes			No			Yes			No		
Year	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o		χ^2	f_o		χ^2
1974	27	27.7	0.0176	42	42.8	0.0149	7	6.3	0.0777	7	9.3	0.5688	34		0.0953	49		0.5837
1976	26	25.3	0.0193	41	40.2	0.0159	5	5.7	0.0859	11	8.7	0.6080	31		0.1052	46		0.6239

The overall chi-square values for the pretest and posttest indicated no significant between-group differences in SDII congruence. However, the small size of the CI group limits the analysis.

The hypothesis that experimental students would acquire significantly greater career maturity than control students is offered strong support by results on the ATCK; experimental students had significantly higher posttest scores than was projected from the performance of their control counterparts. The index of SDII congruence offers no support for the hypothesis. Little change in SDII congruence was demonstrated over the two years.

Hypothesis testing of cumulative skill development thus centered around two within-group tests and two between-group tests of the issues of career knowledge and career maturity. The findings indicated that there was significant within-group experimental growth in career knowledge. This significant within-group growth reached a magnitude to produce between-group differences in favor of the experimental students.

This issue of career maturity is less clear. There is evidence of significant within-group gains on one criterion, the ATCK. Significant between-group differences in favor of the experimental students were also found on the ATCK. However, the other criterion of career maturity produced ambiguous results. Both groups demonstrated little change in SDII congruence.

Thus, while the evidence is clearly in support of increased career knowledge as an effect of RBS Career Education, it is somewhat equivocal concerning the program's effect on increased career maturity, as defined by the measures employed.

Life or Self Skills. The RBS Career Education Program was hypothesized to have impact on life or self skills development. Two criteria were selected as indices of life skills development: attitude toward learning environments and self-concept. Four hypotheses were constructed to assess program impact on these criteria. Two (5 and 7) deal with within-group growth by the experimental students and two (6 and 8) deal with the relative growth of the experimental students compared to their control counterparts. Specific hypothesis testing is presented below.

Hypothesis 5. Experimental students will acquire increased positive attitudes toward learning environments.

The hypothesis that experimental students would acquire increased positive attitudes toward learning environments was tested by comparing the 1974 pretest and 1976 posttest performances of the E1 group on the subtests of the Assessment of Student Attitudes Toward Learning Environments Scale (ASA). Comparisons were conducted through the performance of one-tailed correlated "t" tests on these data. Table 22 presents these analyses.

Table 22

Assessment of Student Attitudes Toward Learning Environments 1974 - 1976: E1 Group Growth (n=63)

Subtest	1974	1976	"t"
Education in General	3.39	3.71	2.05*
School Curriculum	3.25	3.77	3.35*
School Resources	3.16	3.64	3.64*
School Counseling	3.04	3.55	3.34*
Overall Attitude Toward Learning Environments	3.22	3.66	3.45*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated that the E1 group acquired increased positive attitudes toward learning environments. The E1 group showed very large increases on all five subtests of the ASA; increases on all subtests were statistically significant. There is, thus, very strong support for accepting the hypothesis.

Hypothesis 6. Experimental students will develop significantly more positive attitudes toward learning environments than control students in a traditional school program.

The hypothesis that experimental students would develop significantly more positive attitudes toward learning environments than their control counterparts was tested by comparing the actual 1976 posttest performance of the E1 group with projected performance on the Assessment of Student Attitudes Toward Learning Environments Scales (ASA). Comparisons for the E1 and C1 groups were conducted through the performance of regression projection analyses. The results of these analyses are presented in Table 23.

Table 23

Assessment of Student Attitudes Toward Learning Environments 1974-1976: E1 (n=63) vs. C1 (n=28) Group Growth

Subtest	Group	1974	1976	Projected	"t"
Education In General	E1	3.39	3.71	3.41	36.08*
	C1	3.36	3.40		
School Curriculum	E1	3.25	3.77	3.62	1.85*
	C1	3.31	3.61		
School Resources	E1	3.16	3.64	3.21	19.12*
	C1	3.21	3.23		
School Counseling	E1	3.04	3.55	3.02	14.97*
	C1	2.98	3.00		
Overall Attitude Toward Learning Environments	E1	3.22	3.66	3.31	11.92*
	C1	3.23	3.31		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analyses for the ASA subscales indicated that the E1 group exhibited significantly more growth than was projected from the C1 group on all subscales. Thus, there is overwhelming evidence that the hypothesis is supported.

Hypothesis 7. Experimental students will acquire increased positive attitudes toward self.

The hypothesis that experimental students would acquire increased positive attitudes toward self was tested by comparing the 1974 pretest and the 1976 posttest performance of the E1 group on the Berger Acceptance of Self Scale (BASS).

Comparisons of the BASS scores were conducted through the performance of one-tailed correlated "t" tests. Table 24 presents the analysis of the BASS.

Table 24

Self Concept 1974-1976: E1 Group Growth (n=63)

1974	1976	"t"
3.48	3.72	3.62*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparison of the BASS scores indicated that the E1 group clearly demonstrated increased positive attitudes toward self. Thus, there is strong support for the hypothesis that experimental students will acquire increased positive self concept.

Hypothesis 8. Experimental students will develop significantly more positive attitudes toward self than control students in a traditional high school program.

The hypothesis that experimental students would develop significantly more positive attitudes toward self than control students in a traditional high school program was tested by comparing the 1974 pretest and 1976 posttest performance of the E1 group on a measure of self-concept with projected performance based upon C1 group scores. The measure of self-concept used was the BASS and comparisons were conducted by performing a regression projection analysis. Table 25 presents the results of this analysis.

Table 25

Self-Concept 1974-1976:
E1 (n=63) vs. C1 (n=28) Group Growth

Group	1974	1976	Projected	"t"
E1	3.48	3.72	3.46	14.64*
C1	3.74	3.63		

* critical value for "t" = 1.310 df $\geq$ 30 for one way "t" test

The regression projection analysis for the BASS scale indicated that the E1 group exhibited significantly more positive growth in self-concept than was projected from control group growth. Thus, there is very strong support for the hypothesis.

A summary of the life skills findings indicated an increased positive attitude on the part of experimental students toward their

learning environments. These increases were of a sufficiently great degree to make the experimental group significantly more positive toward their learning environments than their control counterparts in a traditional high school program. The change in attitude toward learning environments was also reflected in self-concept. The experimental students showed significantly positive increases in self-concept. Comparisons of the experimental and control group changes in self-concept identified significant between-group differences in favor of the experimental students.

Basic Skills. It was hypothesized that RBS Career Education would have a positive impact on the basic academic skills development of participating students. Two hypotheses were generated to provide specific tests of the impact. The first (9) deals with within-group academic development on the part of the experimental students and the second (10) deals with the magnitude of the growth relative to that of control counterparts in a traditional high school. Specific hypothesis testing is presented below.

Hypothesis 9. Experimental students will acquire increased mastery in basic academic skills.

The hypothesis that experimental students would acquire increased mastery in basic academic skills was tested by comparing the 1974 pretest and 1976 posttest performance of the E1 group on three subtests of the Comprehensive Tests of Basic Skills (CTBS). The subtests used were Reading Comprehension, Arithmetic Concepts, and Arithmetic

Applications. Comparisons were conducted through the performance of one-tailed correlated "t" tests on the EI data. In all cases, the comparisons were conducted on standardized scale scores; these have been translated into grade equivalents for the convenience of the reader. Table 26 presents the grade equivalent data for the EI group. Table 27 presents the scale scores and "t" tests for the experimental group.

Table 26

CTBS Grade Equivalents 1974-1976: EI Group (n=62)

Subtest	1974	1976
Reading Comprehension	7.0	8.5
Arithmetic Concepts	7.2	8.5
Arithmetic Applications	6.5	7.9

Table 27

Basic Skills 1974-1976: EI Group Growth (n=62)

Subtest	1974	1976	"t"
Reading Comprehension	512.33	552.67	4.06*
Arithmetic Concepts	496.98	542.85	5.26*
Arithmetic Applications	483.56	530.75	5.48*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

Analysis of the basic skills data indicated a significant within-group growth on all three subtests of the CTBS. Thus, results offered strong support for the hypothesis that experimental students would acquire increased mastery in basic academic skills.

Hypothesis 10. Experimental students will acquire significantly greater mastery in basic academic skills than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater mastery in basic academic skills than control students was tested by comparing the actual 1976 performance level of the E1 group with projected performance on subtests of the CTBS. The subtests used were Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications. Comparisons for the E1 and C1 groups were conducted through the performance of regression projection analyses. Table 28 presents the results of these analyses.

Table 28

Basic Skills 1974-1976:
E1 (n=63) vs. C1 (n=32) Group Growth

Subtest	Group	1974	1976	Projected	"t"
CTBS-Reading Comprehension	E1	512.33	552.67	547.43	0.18
	C1	533.50	560.34		
CTBS-Arithmetic Concepts	E1	496.98	542.85	515.47	5.80*
	C1	534.47	547.71		
CTBS-Arithmetic Applications	E1	483.56	530.75	502.40	6.96*
	C1	519.23	522.74		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analyses for the CTBS subtests indicated that the E1 group exhibited significantly higher growth rates when compared with performance projected from the C1 group on two of the three subtests: Arithmetic Concepts, and Arithmetic Applications.

There was no overall significant difference with regard to Reading Comprehension, although the E1 group did appear to close the initial gap somewhat. Thus, there is some support for the hypothesis that experimental students will acquire significantly greater mastery of basic skills than control students in a traditional school program.

It was hypothesized that RBS Career Education would have a positive impact on the basic academic skills development of students participating in the program. The testing of hypotheses indicated that experimental students gained significantly on all subtests of the CTBS. This development was significantly better than the basic skills development of control counterparts in a traditional high school program on two of the three subtests, those involving mathematics. There was no significant difference between the groups in reading comprehension, although the E1 group seemed to close an initial gap in the performance means.

Second Year Program Effects

The analysis of second year program effects examines the specific contribution of a second year of program participation in the development of students' career skills, life or self skills, and basic skills. This section describes student growth from the point at which they were posttested in 1975 to the time of posttesting in 1976.

Career Skills. Four hypotheses were generated to test second year program impact on career skills development. Two (11 and 13) deal with within-group acquisition of career knowledge and maturity and

two (12 and 14) deal with between-group differences in career knowledge and maturity. Specific hypothesis testing results are presented below.

Hypothesis 11. Experimental students will acquire increased mastery in career knowledge during the second year of program participation

The hypothesis that second year experimental students would acquire increased mastery in career knowledge was tested by comparing the 1975 and 1976 posttest performances of the E1 group on the Occupational Information and Planning subtests of the Career Maturity Inventory (CMI). Comparisons were conducted through the performances of one-tailed correlated "t" tests on these data. Table 29 presents these comparisons.

Table 29

Career Knowledge 1975-1976: E1 Group Growth (n=62)

Subtest	1975	1976	"t"
Occupational Information	13.93	15.52	4.85*
Planning	10.92	13.11	4.74*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated that the E1 group acquired increased mastery on both subtests of the CMI. The increased mastery was at the level of statistical significance for both subtests for the E1 group; the hypothesized effect was realized fully for the second year students.

Hypothesis 12. Experimental students will acquire significantly greater mastery in career knowledge during the second year of program participation than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater mastery in career knowledge than control students in a traditional high school program was tested by comparing the actual 1976 posttest performance of the E1 group with projected performance based upon control group gains on the Occupational Information and Planning subtests of the CMI. Comparisons were conducted through the performance of regression projection analyses. Table 30 presents CMI Occupational Information and CMI Planning subtest results for the E1 and C1 groups.

Table 30

Career Knowledge 1975-1976
E1 (n=62) vs. C1 (n=28) Group Growth

Subtest	Group	1975	1976	Projected	"t"
CMI Occupational Information	E1	13.93	15.52	15.85	- 1.02
	C1	14.57	16.17		
CMI Planning	E1	10.92	13.11	12.58	1.27
	C1	12.70	13.40		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analyses for the CMI Occupational Information and CMI Planning subtests indicated no significant differences in growth rates between the two groups during the second year.

The E1 group scored slightly lower than projected for the Occupational Information subtest and slightly higher than projected for the Planning subtest. The hypothesis that experimental students would acquire significantly greater mastery than control students during the second year of program participation is not supported.

Hypothesis 13. Experimental students will acquire increased career maturity during the second year of program participation.

The hypothesis that experimental students would acquire increased career maturity over the course of the second year was tested by conducting comparisons of the 1975 and 1976 posttest levels of performance on the Attitude Toward Career Knowledge subtest of the Career Attitude Survey (CAS) and the pretest and posttest congruence of primary code and primary occupation considered on the Self-Directed Interest Inventory (SDII). The appropriate statistical test for the former comparisons was a one-tailed correlated "t" test; the appropriate statistical procedure for the latter was a chi-square analysis. The analyses of career maturity are presented in Table 31.

Table 31

Career Maturity 1975-1976: E1 Group Growth (n=62)

Measure	1975	1976	"t"	χ^2
Attitude Toward Career Knowledge	3.55	3.93	4.01*	
SDII Congruence	22/56	26/41		0.1215

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated a large statistically significant increase for the E1 group's Attitude Toward Career Knowledge and only a slight increase in SDII congruence. Congruence on the SDII was only slightly increased on the posttest, and results were nonsignificant.

The results offered partial support for the hypothesis that experimental students would acquire increased career maturity during the second program year.

Hypothesis 14. Experimental students will acquire significantly greater career maturity during the second year of program participation than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater career maturity during the second year than control students in a traditional school program was tested by comparison of the actual 1976 E1 posttest score with the projected score on the Attitude Toward Career Knowledge (ATCK) subtest of the CAS and congruence on the SDII. Table 32 presents the ATCK results for the E1 and C1 groups.

Table 32

Attitude Toward Career Knowledge 1975-1976:
E1 (n=62) vs. C1 (n=28) Group Growth

Group	1975	1976	Projected	"t"
E1	3.55	3.93	3.83	1.65*
C1	3.32	3.71		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analysis for the ATCK scale indicated that the EI group exhibited significantly more positive growth in attitudes toward careers during the second program year than was projected from control group growth.

Comparisons of EI and CI congruence on the SDII were conducted through the performance of Chi-square analyses on 1975 and 1976 data. These analyses are presented in Table 33. Only a small sample of CI students completed the "Primary Occupation Considered" section of the SDII and only matched group results are presented.

Table 33

SDII Congruence 1975-1976

	EI						CI						ALL			
	Yes			No			Yes			No			Yes		No	
Year	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	f_e	χ^2	f_o	χ^2	f_o	χ^2
1975	22	21.9	0.0004	56	54.3	0.0532	4	4.1	0.0024	10	9.6	0.0166	26	0.0028	66	0.0698
1976	26	26.1	0.0003	41	42.7	0.0676	5	4.9	0.0020	11	11.4	0.0140	31	0.0023	52	0.0816

The overall chi-square values for the 1975 and 1976 posttests indicated no significant between-group difference in SDII congruence. The small CI sample size limits the between-group analysis.

The hypothesis that experimental students would acquire significantly greater career maturity than control students during the second year is offered strong support by results on the ATCK; EI students had significantly higher posttest scores than was projected

from the performance of their control counterparts. The index of SDII congruence offers scant support for the hypothesis. Little change in SDII congruence was demonstrated during the second program year.

Hypothesis testing of second year career skill development thus centered around two within-group tests and two between-group tests of the issues of career knowledge and career maturity. The findings indicated that there was significant second year within-group experimental growth in career knowledge. However, experimental group growth did not exceed the projected growth based upon results of the CI group.

The issue of career maturity is less clear. There is evidence of significant within-group growth on one criterion, the ATCK. Significant between-group differences in favor of experimental group students were found on the ATCK. However, the other criterion of career maturity produced ambiguous results. Both groups demonstrated little change in SDII congruence.

Life or Self Skills. RBS Career Education is hypothesized to have impact on life or self skills development. Two criteria were selected as indices of life skills development: attitude toward learning environments and self-concept. Four hypotheses were constructed to assess program impact on these criteria. Two (15 and 17) deal with within-group growth by the experimental students and two (16 and 18) deal with the relative growth of the experimental students compared to their control counterparts. Specific hypothesis testing is presented below.

Hypothesis 15. Experimental students will acquire increased positive attitudes toward learning environments during the second year of program participation.

The hypothesis that experimental students would acquire increased positive attitudes toward learning environments during the second year of program participation was tested by comparing 1975 and 1976 performances of the EI group on the subtests of the Assessment of Student Attitudes Toward Learning Environments Scale (ASA). Comparisons were conducted through the performance of one-tailed correlated "t" tests on these data. Table 34 presents these analyses.

Table 34

Assessment of Student Attitudes Toward Learning Environments 1975-1976: EI Group Growth (n=62)

Subtest	1975	1976	"t"
Education In General	3.59	3.74	2.12*
School Curriculum	3.74	3.77	0.28
School Resources	3.40	3.65	3.34*
School Counseling	3.48	3.54	0.47
Overall Attitude Toward Learning Environments	3.53	3.67	2.09*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

The comparisons indicated that the EI group acquired increased positive attitudes toward learning environments during the second year. The EI group showed significant increases on three subtests of the ASA,

education in general, school counseling, and overall attitude toward learning environments. Attitudes on all scales were very positive. There is, thus, strong support for accepting the hypothesis that students acquire increased positive attitudes toward learning environments during their second program year.

Hypothesis 16. Experimental students will develop significantly more positive attitudes toward learning environments during the second year of program participation than control students in a traditional school program.

The hypothesis that experimental students would develop significantly more positive attitudes toward learning environments than their control counterparts during the second year was tested by comparing the actual 1976 performance of the E1 group with projected performance on the Assessment of Student Attitudes Toward Learning Environments Scales (ASA). Comparisons for the E1 and C1 groups were conducted through the performance of regression projection analyses. The results of these analyses are presented in Table 35.

The E1 group's second year scores exceeded the projected performance on all subscales of the ASA. The differences were statistically significant on three of the five subscales: school resources, school counseling, and overall attitude toward learning environments. There is very strong support for the hypothesis that second year experimental students gain significantly more positive attitudes toward learning environments than do control students in a traditional high school program.

Table 35

Assessment of Student Attitudes Toward Learning Environments 1975-1976: E1 (n=62) vs. C1 (n=28) Group Growth

Subtest	Group	1975	1976	Projected	"t"
Education In General	E1	3.59	3.74	3.70	0.22
	C1	3.22	3.38		
School Curriculum	E1	3.74	3.77	3.72	0.16
	C1	3.61	3.64		
School Resources	E1	3.40	3.65	3.29	18.46*
	C1	3.26	3.20		
School Counseling	E1	3.48	3.54	3.24	12.77*
	C1	3.05	2.96		
Overall Attitude Toward Learning Environments	E1	3.53	3.67	3.52	3.97*
	C1	3.27	3.29		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

Hypothesis 17. Experimental students will acquire increased positive attitudes toward self during the second year of program participation.

The hypothesis that experimental students would acquire increased positive attitudes toward self during the second year of program participation was tested by comparing the 1975 and 1976 performance of the E1 group on the Berger Acceptance of Self Scale (BASS). Comparisons of the BASS scores were conducted through the performance of one-tailed correlated "t" tests. Table 36 presents the analyses of the BASS. The comparison of the 1975 and 1976 BASS scores indicated that the E1 group clearly demonstrated increased positive attitudes toward self. Thus, there is very strong support for the hypothesis.

Table 36

Self-Concept 1975-1976: E1 Group Growth (n=62)

1975	1976	"t"
3.40	3.72	5.06*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

Hypothesis 18. Experimental students will develop significantly more positive attitudes toward self during the second year of program participation than control students in a traditional high school program.

The hypothesis that second year students would develop significantly more positive attitudes toward self than control students in a traditional high school program was tested by comparing 1976 performance of the E1 group on a measure of self-concept with performance projected from C1 group scores. The measure of self-concept used was the BASS. Comparisons for the second year groups were conducted by performing a regression projection analysis. Table 37 presents the results of this analysis.

The regression projection analysis for the BASS scale indicated that the E1 group exhibited significantly more positive growth in self-concept during the second year program than was projected from control group growth.

Table 37

Self-Concept 1975-1976:
EI (n=62) vs. CI (n=28) Group Growth

Group	1975	1976	Projected	"t"
EI	3.40	3.72	3.59	3.99*
CI	3.49	3.66		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

Thus, there is strong support for the hypothesis that the experimental students develop more positive self-concepts than control students during the second year.

A summary of the second year life skills findings indicated an increased positive attitude on the part of experimental students toward their learning environments. These increases were of a sufficiently great degree to make the experimental group significantly more positive toward their learning environments than their control counterparts in a traditional high school program. The change in attitude toward learning environments was also reflected in self-concept. The second year experimental students showed significantly positive increases in self-concept. Comparisons of the experimental and control group changes in self concept identified significant between-group differences for the second year students.

Basic Skills. It was hypothesized that RBS Career Education would have a positive impact on the basic academic skills

development of participating students. Two hypotheses were generated to provide specific tests of the impact. The first (19) deals with within group academic development on the part of the second year experimental students and the second (20) deals with the magnitude of the growth relative to that of control counterparts in a traditional high school. Specific hypothesis testing is presented below.

Hypothesis 19. Experimental students will acquire increased mastery in basic academic skills during the second year of program participation.

The hypothesis that second year experimental students would acquire increased mastery in basic academic skills was tested by comparing the 1975 and 1976 posttest performances of the E1 group on subtests of the Comprehensive Tests of Basic Skills (CTBS). The subtests used were Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications. Comparisons were conducted through the performance of one-tailed correlated "t" tests on the E1 data. In all cases the comparisons were conducted on standardized scale scores; these have been translated into grade equivalents for the convenience of the reader. Table 38 presents the grade equivalent data for the E1 group; Table 39 presents the scale scores and "t" tests for the group.

Analysis of the second year data indicated significant within-group growth on all three subtests of the CTBS: Reading Comprehension, Arithmetic Concepts and Arithmetic Applications.

Table 38

CTBS Grade Equivalents 1975-1976: EI Group (n=58)

Subtest	1975	1976
Reading Comprehension	7.2	8.5
Arithmetic Concepts	7.9	8.5
Arithmatic Applications	7.1	7.9

Table 39

Basic Skills 1975-1976: EI Group Growth (n=58)

Subtest	1975	1976	"t"
Reading Comprehension	508.64	549.18	3.01*
Arithmetic Concepts	520.74	542.79	2.67*
Arithmetic Applications	503.00	532.43	3.57*

* critical value for "t" = 1.310 when df $\geq$ 30 for one tail "t" test

Thus, the results offered very strong support for the hypothesis that experimental students would acquire increased mastery in basic academic skills during the second year of program participation.

Hypothesis 20. Experimental students will acquire significantly greater mastery in basic academic skills during the second year of program participation than control students in a traditional high school program.

The hypothesis that experimental students would acquire significantly greater mastery in basic academic skills during the second year than control students was tested by comparing the actual 1976 performance levels of the EI group with projected performance on subtests of the CTBS. The subtests used were Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications. Comparisons for the EI and CI groups were conducted through the performance of regression projection analyses. Table 40 presents the results of these analyses.

Table 40

Basic Skills 1975-1976:
EI (n=58) vs. CI (n=28) Group Growth

Subtest	Group	1975	1976	Projected	"t"
CTBS-Reading Comprehension	EI	508.64	549.18	535.17	3.53*
	CI	544.50	563.50		
CTBS-Arithmetic Concepts	EI	520.74	542.79	548.48	-0.32
	CI	544.21	566.32		
CTBS-Arithmetic Applications	EI	503.00	532.43	505.54	8.87*
	CI	550.43	534.00		

* critical value for "t" = 1.310 when df $\geq$ 30 for one way "t" test

The regression projection analyses for the CTBS subtests indicated that the EI group exhibited significantly increased second year growth rates when compared with results projected from group performance on two of the three subtests: Reading Comprehension and

Arithmetic Concepts. Thus, there is partial support for the hypothesis that second year experimental students will acquire significantly greater mastery of basic skills than control group students in a traditonal school program.

It was hypothesized that the RBS Career Education Program would have a positive impact on the basic academic skills development of students participating in the program. The testing of hypotheses indicated that second year students gained significantly on all subtests of the CTBS. This development was significantly better than the basic skills development of control counterparts in a traditional high school program on two of three subtests.

VII. SUMMARY AND CONCLUSIONS

This report has presented cumulative (two year) and second year program results for students who have participated in RBS Career Education from the 1974-1975 through 1975-1976 academic years and has described the procedures utilized in the evaluation. This concluding section briefly summarizes the report content and presents conclusions based upon evaluation findings over the past two years.

RBS Career Education was developed, implemented, and tested as a result of the National Institute of Education's initiative in sponsoring Experience-Based Career Education. The program provides secondary school students with cognitive skills, career experiences, and personal perspectives which aid in the selection and pursuit of adult life goals. Three principal instructional components are employed to achieve the program goals; they are Career Development, Career Guidance, and Basic Skills. Students participate in activities conducted at the sites of various community resources and at a central facility within a large urban high school. The 1975-1976 school term was the fourth implementation year for RBS Career Education.

Two groups of students (E1 and C1) were randomly assigned from the pool of 1974-1975 program applicants to experimental and control groups. Results of one year student outcomes were analyzed and reported in the 1974-1975 Final Evaluation Report.

The true experimental design was maintained with returning E1 and C1 students during the 1975-1976 school year to assess two year and second

year outcomes. In all, there were 68 experimental students and 36 control students in the remaining groups who participated in the program evaluation during 1975-1976.

The composition of the retained student groups was analyzed with regard to a series of demographic, aspirational, and achievement characteristics. The groups were found to be similar in most respects. Differences between groups were found with regard to achievement characteristics.

Most students were twelfth graders with smaller representations from the tenth and eleventh grades. There were fewer males than females and fewer Whites than Blacks in the student samples.

The most popular reasons for applying to the RBS Career Education program were to find out about careers, to receive job training, to receive counseling about what to do after high school and to get help in finding a job.

Most students depicted their parents as having some high school training or high school diploma. Most fathers were indicated to be skilled or semi-skilled workers. The largest group of mothers were in the homemaker category. Regarding the students themselves, most anticipated attending a four-year college, full-time employment, or vocational - technical school. Specific occupational aspirations were varied, but many suggested the use of further training and some entrepreneurial interest. In general, the plans indicated by students exceeded the ambitions reportedly realized by their parents.

In terms of academic achievement as measured by standardized tests of basic skills, the average grade equivalents on the pretest (1974) ranged from the sixth through eighth grade level. Such averages are well below the desirable levels as expressed by national norms. Scores of C1 students were significantly higher than those of the E1 group.

These descriptions of student samples included all students who had been involved in the evaluation throughout the entire 1974-1976 period. Another contingent of students was not represented because they dropped out of the student groups during the course of the two years. The attrition rates for both groups over the course of the two years were substantial.

Experimental group attrition was due to graduates in 1975, school dropouts, transfer into regular school programs, and school transfers. Control group attrition was due to 1975 graduates, school dropouts, and school transfers.

The school dropout rates for experimental group members were significantly lower than the rates for the control group. This finding suggested that exposure to the program may affect school dropout trends.

The samples of eliminated students included in the attrition study were not used in analysis of student effects. The E1 and C1 groups were administered a series of instruments on a pretest-posttest-posttest schedule in order to measure student performance over the two years. The instruments were as follows:

1. Career Maturity Inventory (CMI)
2. Career Attitude Scale (CAS)
3. Self-Directed Interest Inventory (SDII)
4. Assessment of Student Attitudes Toward Learning Scale (ASA)
5. Berger Acceptance of Self Scale (BASS)
6. Comprehensive Tests of Basic Skills (CTBS)

An additional instrument, the Student Demographic Data Questionnaire (SDQ) was given twice to gather demographic, background and personal planning information.

The instruments provided student performance scores related to the three areas of program emphasis: career skills, life or self skills, and basic skills. Within each of these areas, hypotheses were constructed regarding cumulative (two year) and second year growth within the experimental group and comparative cumulative and second year performance levels between the experimental and control groups.

Hypotheses were established in terms of five major outcomes: career knowledge, career maturity, attitudes toward learning environments, self-concept, and basic skills. Within each intended outcome area, there were two categories of hypotheses, and each was stipulated at two levels. One category treated gains within the experimental group (E1); the other category was concerned with the performance of the experimental group relative to the control group (E1 vs. C1). At the first level, cumulative effects were assessed using 1974 pretest and 1976 posttest scores; at the other level, second year effects were

assessed using 1975 posttest and 1976 posttest scores. A total of twenty hypotheses were generated. The hypothesized effects were tested through statistical procedures including t-tests, chi-square analyses, and regression projection analyses.

Preceding the actual testing of hypotheses, analyses of data representativeness were performed for the randomly selected groups (E1 and C1) in order to estimate the effects of attrition and testing absence on the final pairs. These analyses indicated that the final groups were not representative of the initially drawn groups with respect to presenting achievement level. Scores of retained E1 students were significantly lower than the dropped E1 group, whereas scores of the retained C1 group were significantly higher than the dropped C1 group. Thus, it was concluded that pretest differences between groups were real and not due to sampling variation. This finding necessitated changes in the analysis plan to include the regression projection technique and to exclude the intended analyses of variance and covariance from the plan.

RBS Career Education hypothesized student effects in the areas of career skills, life or self skills, and basic skills. Altogether, twenty hypotheses were tested, using the procedures outlined above. The overall results for each area are summarized in Table 1. Table 1 also summarizes the study of one-year effects, which was reported in 1974-1975. The study of one year effects was conducted under true

Table 1

Summary of Student Outcomes: 1974-1976

Area of Hypothesized Outcome	Scale	Within-Group Effects			Between-Group Effects		
		One Year	Second Year	Cumulative	One Year	Second Year	Cumulative
Career Skills	Career Maturity Inventory (CMI)						
	- Occupational Information	*	*	*	-	-	*
	- Planning	*	*	*	-	-	*
	Career Attitude Scale (CAS)						
	- Attitude Toward Career Knowledge	-	*	*	*	*	*
	Self-Directed Interest Inventory (SDII)	-	-	-	-	-	-
Life or Self Skills	Assessment of Student Attitudes Toward Learning Environments (ASA)						
	- Education in General	-	*	*	*	-	*
	- School Curriculum	*	-	*	-	-	*
	- School Resources	-	*	*	*	*	*
	- School Counseling	*	-	*	*	*	*
	- Overall	*	*	*	*	*	*
	Berger Acceptance of Self Scale (BASS)	-	*	*	-	*	*
Basic Skills	Comprehensive Tests of Basic Skills (CTBS)						
	- Reading Comprehension	-	*	*	-	*	-
	- Arithmetic Concepts	*	*	*	-	-	*
	- Arithmetic Applications	*	*	*	-	*	*

* Significant at .10

- Not Significant

experimental conditions and included the retained 1975 - 1976 students as well as those who dropped from the groups after the 1974 - 1975 school year. Results of first year, second year and two-year participation are discussed separately below.

Cumulative (Two Year) Effects. Analysis of cumulative growth demonstrated the overall effects of two years of program participation with respect to each of the hypothesized outcome areas.

In career knowledge, the results of the CMI indicated that the experimental group demonstrated significant growth over the course of the two years. This cumulative growth was significantly superior to that of the control group. In career maturity, the experimental group demonstrated significant growth at a level superior to the control group in attitudes toward careers. No significant growth in SDII congruence was demonstrated.

Experimental students exhibited significant increases on all subscales of the ASA over the two years of program participation. Experimental group growth was superior to control group growth on all subscales. The results reflected significantly increased positive attitudes toward education in general, school curriculum, school resources, school counseling, and learning environments. Similar results were found regarding perception of self. Experimental students showed increases in self concept over the two years at a level sufficient to demonstrate significant superiority over the control group.

Experimental students exhibited significant increases on each of the CTBS subtests over the course of the two years. Experimental group growth was superior to that of the control group on both of the mathematics subtests.

First Year Effects. The true experimental design for the analysis of first year program effects remained intact during 1974-1975. Student development in career skills, life or self skills, and basic skills was assessed.

The career skills component was represented by the hypothesized development in career knowledge and career maturity. The results indicated that experimental students demonstrated significant growth in career knowledge during the first year of program participation. The between-group differences in career knowledge were not significant, primarily due to control group superiority on the pretest. Experimental students closed the initial gap, but posttest results were not statistically significant. In the career maturity area, experimental growth was not demonstrated, but control group regression on the CAS resulted in superior year-end performance by the experimental group.

The life or self skills area was represented by hypothesized development in attitudes toward learning environments and in self-concept. The first year experimental students showed significant increases in attitudes toward learning environments over the course of the year. The experimental students' posttest levels on the attitudinal scales were also found to be significantly higher than the control students' scores. No significant growth in self-concept was indicated for the first year students.

The basic skills area was tested using portions of the CTBS, a standardized achievement battery. The experimental students showed some significant growth in basic skills over the year, but not in all areas tested. Comparative analyses did not indicate significant superiority of the experimental students over the controls for any test employed.

Second Year Effects. Several students from the original E1 group decided to participate in RBS Career Education for a second year. This permitted analyses of outcomes for the retained students during the second year of program participation. Hypotheses in each of the major areas of effect were tested.

In career knowledge, results indicated that the experimental group demonstrated significant growth during the second year. However, this growth was not significantly better than that of the control group.

In career maturity there was evidence of significant development within the experimental group with respect to career attitudes. This growth reached a magnitude sufficient to produce a significant second year superiority of the experimental students over their control counterparts. The experimental students did not exhibit a significant increase in congruence of career choice and summary rating of the Self-Directed Interest Inventory.

Experimental students showed significant increases in attitudes toward learning environments and self concept during the second year. The experimental students' posttest levels on both measures were also found to be significantly higher than the control students' scores.

Experimental students exhibited significant increases on each of the three subtests of the CTBS during the second year. The E1 group demonstrated superior growth over the C1 group in Reading Comprehension and Arithmetic Applications.

Conclusions. Several conclusions can be drawn from the results of the evaluation of RBS Career Education which was conducted from the 1974-1975 through 1975-1976 academic years. These conclusions are drawn from information presented in this report and the 1974-1975 Final Evaluation Report

Experimental group attrition was substantial over the course of the two years. Much of the first year attrition occurred early in the school year and was probably due to differing expectations of program applicants. This finding indicated the need of more comprehensive recruitment procedures and pre-enrollment sessions. Second year attrition was due to a variety of factors which were informally indicated by project staff. Reasons for second year attrition included voluntary and involuntary drops from the program, graduation, school transfer, and school dropout. It was indicated that some of the students who voluntarily dropped from the program felt that one year of program participation satisfied their needs. A more comprehensive study of the reasons for program attrition is needed.

The school dropout rates for experimental group members were significantly lower than the rates for the control group during each of the program years and over the course of the two years. This finding strongly suggested that exposure to the program affects school dropout trends.

The career skills area hypothesized growth in career knowledge and career maturity. In career knowledge, the results of the Career Maturity Inventory indicated that the experimental group demonstrated significant growth over the course of the two years and during both program years.

Cumulative experimental group growth over the two years was significantly superior to the control group. Experimental students exhibited higher growth rates than the control students during each year of participation although results were not statistically significant. First year experimental growth appeared to exceed second year growth.

In career maturity there were different findings with regard to first and second year experimental group growth in career-related attitudes. There was no change in career attitudes for the EI group during the first year, although the control group demonstrated significant regression. However, during the second year the experimental students exhibited significantly, greater growth than the control students. Growth with respect to career attitudes during the second year reached a magnitude sufficient to produce significant results in favor of the EI group with respect to both within group and between-group cumulative effect hypotheses.

None of the hypotheses which examined the congruence between career choice and summary rating on the SDII were supported. Since these results are not consistent with the other findings in career maturity, it is suspected that the results are due to the nature of the instrument.

Overall, the results clearly supported program effectiveness in the career skills area. Experimental group growth in career knowledge was demonstrated for each year of participation and was superior to cumulative control group growth over the course of two years. Experimental group superiority was also demonstrated in career maturity. The advantages of a second year of participation are reflected in increased positive

attitudes toward careers. Experimental students career-related attitudes were superior to those of control students for each of the program years and for the cumulative two year period.

The life or self skills area was represented by hypothesized growth in attitudes toward learning environments and self concept. Effects in each of these representative life skills were tested within the experimental groups and between the experimental and control groups.

Experimental students showed significant increases in overall attitudes toward learning environments during the first and second years of program participation and over the two years. Each of increases was superior to control group growth. Analysis of the individual subscales over the course of the two years provided interesting results. During the first year, experimental students exhibited increased positive attitudes toward school curriculum, school counseling, and overall learning environments. During the second year, the experimental group showed increased growth in attitudes toward education in general, school resources, and overall learning environments. Over the two years, experimental students gained significantly in all areas at a level superior to the control group. Thus, first year growth was clearly illustrated in those areas of learning environments which the intervention of RBS Career Education immediately affects, namely, school curriculum and school counseling. Attitudes toward more remote factors such as education in general and learning resources remained stable during the first year but significantly increased during the second year of

program participation. Both year's effects combined to produce superiority in all areas over the course of the two years. These results clearly illustrated the impact of participation in RBS Career Education for two years with respect to attitudes toward learning environments.

Attitudinal change was also reflected in experimental students' self concept. First year results showed no significant growth in self concept. However, the experimental group exhibited a significant increase in self concept during the second year of participation which was of sufficient magnitude to produce significant two year growth and superior second year and cumulative growth over the control group.

The life or self skills results strongly supported the program's efficacy in learning-related attitudes and self concept. All hypotheses in the life or self skills area except for first year effects in self concept were supported. The advantages of two year program participation with respect to life skills development were illustrated.

The basic skills area was tested using three subtests of the CTBS: Reading Comprehension, Arithmetic Concepts and Arithmetic Applications. Again, growth within the experimental groups and comparative experimental-control development were hypothesized.

During the first year of program participation, experimental students exhibited increased performance on two of the three subtests of the CTBS. However, experimental group performance was not significantly higher than the control group's performance on any of the

subtests. During the second year, experimental students showed significant growth on all subtests at a level sufficient to produce superior comparative effects in Reading Comprehension and Arithmetic Applications. Cumulative within-group growth was significant on all subtests although overall comparative growth in Reading Comprehension was not significant due to the low gains during the first year. Analyses of cumulative comparative growth for both mathematics subtests indicated superiority of the experimental group. Thus, the experimental program was demonstrated to offer advantages in the provision of basic skills instruction, particularly for those students who participated for two years.

In conclusion, it has been demonstrated that students benefit from both one or two years of participation in RBS Career Education. During the first year, program students demonstrate significant growth in career knowledge, attitudes toward learning environments, and basic skills; first year experimental student outcomes were significantly higher than control student performance on measures of career maturity and learning-related attitudes. Students who decided to participate in the program for a second year demonstrated significant growth in all areas of hypothesized effect. Second year students replicated first year growth and exhibited additional program effects in career maturity, self concept, and reading comprehension. Experimental student performance during the second year was superior to control group performance in career maturity, learning-related attitudes, self concept, and basic skills. The cumulative impact of two years of participation in RBS

Career Education was clearly demonstrated as all two year hypotheses of effect were supported.